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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/091,699

03/04/2002

Robert P. Mandal

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K/JW

7928

32588

7590

10/02/2002

APPLIED MATERIALS, INC.
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SANTA CLARA, CA 95050

EXAMINER

RAO, SHRINIVAS H

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 10/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/091,699

Applicant(s)

MANDAL, ROBERT P.

Examiner

Steven H. Rao

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- ☐ Interview Summary (PTO-413) Paper No(s). _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of paper submitted under 35 U.S.C. 120 claiming priority from U.S. Serial No. 09/484,689 filed 01/18/ 2000 , which papers have been placed of record in the file. A c-i-p based upon the afore mentioned priority has been established.

Continued Prosecution Application

The request filed on March/04/2002 for a Continuation-In Part Application (CIP) under 37 CFR based on parent Application No. 09/484,689 is acceptable and a CIP has been established. An action on the CIP follows.

Information Disclosure Statement

Acknowledgment is made of receipt of Applicant's Information Disclosure Statement (PTO-1449) filed .on June 13, 2002.

The references on PTO 1499 submitted on 06/13/2002 are acknowledged. All the cited references have been considered and the contract employees instructed to mail a copy of the initialed Pto-1449 along with the instant Office Action.

Drawings

The drawings filed on March 04, 2002 have been accepted by the draftsman.

Claim Rejections - 35 USC § 112

I. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 to 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 and 19 the phrase "at a temperature that retains the member in a conformal layer" and "annealing the conformal layer at a temperature sufficient to convert the member to dispersed voids" renders the claim indefinite.

One of ordinary skill in the art cannot determine what temperature is included and what temperature is excluded by the above recitation and further the prior art, applicants' specification etc. does not provide any help to determine the temperatures included/excluded. It is noted the temperature can vary depending upon several process conditions.

Claims 2-18 are rejected for at least depending upon rejected independent claims 1 and 19.

Similarly the recited temperature sufficient to convert the member to dispersed voids does not enable one of ordinary skill in the art to determine what is included and what is excluded.

Double Patenting

Claims 1-19 of this application conflict with claims 1-30 of Application No. 09/484,689. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

Claim Rejections - 35 USC § 101

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by *Grill (U.S. Patent No. 6,312,793 herein after Grill) .

With respect to claims 1 and 19 , Grill describes a method for depositing a low dielectric constant film including introducing a siloxane comprising two or more silicons and four or more methyl groups bonded to the silicons into a processing chamber (Grill col.3 lines 15-20) introducing at least one oxidizable chemical comprising a member selected from the group consisting of tertiarybutyl, tertiarybutoxy, furfuryl, furfuryloxy and neopentyl into the processing chamber (Grill col. 3 lines 35-50), reacting the siloxane and the at least one oxidizable chemical with an oxidizing gas at a temperature that retains the member in a conformal layer (Grill figs. 2A and B, col. 6 lines 54-61), and annealing the conformal layer at a temperature sufficient to convert the member to dispersed voids. (Grill col. 8 lines 29-30).

With respect to claim 2 wherein the at least one oxidizable chemical comprises two or more members selected from the group consisting of tertiarybutyl, tertiarybutoxy, furfuryl, furfuryloxy, and neopentyl. (col. 3 lines 15-50).

With respect to claims 3-4 wherein the one oxidizable chemical comprises furfuryl ether, tertiarybutylfurfuryl ether and neopentylfurfuryl ether (col. 3 lines 51-53 and col. 3 lines 33-37).

With respect to claim 5 wherein the one oxidizable chemical comprises silicon (Grill col. 3 line 14).

With respect to claims 6-7 wherein the oxidizable chemical is silane and the silane is dimethylfurfuryloxy silane (col. 3 line 20)_

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With respect to claims 8 -9,11,14-15 wherein the at least one oxidizable chemical is disiloxane: 1,3 dimethyl- 1,3- ditertiabutyl disiloxane and 1,3-dimethyl- 1,3-ditertiarybutoxy disiloxane ; 1,1,3,3-tetramethyldisiloxane, 1,3,5,7-tetramethylcyclotetrasiloxane ; 1,3-dimethyl-1,3-ditertiarybutyl disiloxane; 1,3-dimethyl-1,3-ditertiarybutoxy disiloxane . (Grill col. 3 lines 14-26).

With respect to claims 10 and 13 wherein the at least one oxidizable chemical is 1,1, ditertiarybutylethylene (Grill col. 3 lines 49-53).

With respect to claims 12,17 wherein the at least one oxidizable chemical is tertiarybutylfurfuryl ether (Grill col.3 line 34-35).

With respect to claim 18, wherein the method further comprises depositing a silicon carbide layer on the conformal layer prior to annealing the conformal layer. (Grill col. 54-col. 6 lines 12).

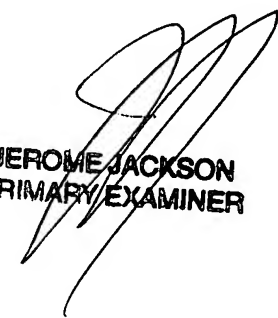
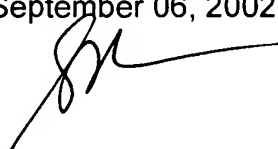
Any inquiry concerning this communication or earlier communication from the examiner should be directed to Steven H. Rao whose telephone number is (703) 306-5945. The examiner can normally be reached on Monday- Friday from approximately 7:00 a.m. to 5:30 p.m.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956. The Group facsimile number is (703) 308-7722.

Steven H. Rao

Patent Examiner

September 06, 2002



JEROME JACKSON
PRIMARY EXAMINER